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NATIONAL RESEARCH COUNCIL

MINUTES OF THE MEETING OF THE EXECUTIVE BOARD

AT THE NATIONAL RESEARCH COUNCIL BUILDING, JULY 9, 1918, AT 9.40 A.M.

Present: Messrs. Bogert, Cross, Dunn, Johnston, Kellogg, Merriam, Millikan, Noyes, Pearce, Woodward, and by invitation, Mr. Edgar.

The minutes of the preceding meeting, April 30, 1918, having been circulated by mail, were considered and approved.

The Acting Chairman, Mr. Noyes, reviewed the activities of the Council since the last meeting of the Executive Board, April 30, 1918, stating that the President of the United States had issued an Executive Order defining the functions of the Council, that the Carnegie Corporation of New York had made an appropriation of \$100,000 for the expenses of the divisions, and that the President of the United States had allotted, through the Council of National Defense \$61,000 for the running expenses of the Council, including the Research Information Committee, for the period from July 1 to December 31, 1918. He stated further that the work of the Research Information Committee had been increasing steadily, and that the third office had been established in Rome. He also briefly described the plan for the endowment of research in chemistry and physics which had been submitted to the Rockefeller Foundation.

The National Research Council budget was presented, and Mr. Dunn

Moved: That the allotments in the budget as presented be approved. (*Adopted.*)

Moved: That there be presented at each monthly meeting of the Executive Board a *budget sheet* showing for comparison the following items: Funds Available for the year, Total Amounts allotted, Liabilities, Expenses, and Balances. (*Adopted.*)

Motion adopted at the meeting of the Interim Committee, July 3, 1918: That the Carnegie Institution of Washington be requested to allow Mr. John L. Wirt, its bursar, to advise the National Research Council in regard to an improved accounting system for the carrying on of its business and that the Secretary and Treasurer be asked to confer with Dr. R. S. Woodward and Mr. Wirt in regard to the matter.

Mr. Woodward, being present, offered the services of the accountant of the Carnegie Institution of Washington, Mr. John L. Wirt and his assistant, to look into the accounts of the National Research Council and to make suggestions as to improved methods of carrying them on. The offer was accepted.

The National Research Council accepted full membership in the Emergency Council on Education, and J. C. Merriam was elected representative of the Council. The membership fee of \$100 to cover expenses was authorized.

The President of the National Academy of Sciences has appointed as members of the National Research Council the following men, upon the recommendation of the Interim Committee:

Brig.-General Marlborough Churchill, Military Intelligence Division, U. S. A.
Major-General Wm. L. Sibert, Director, Chemical Warfare Service, U. S. A.
Brig. General Clarence C. Williams, Acting Chief of Ordnance, U. S. A.
Comfort A. Adams, President, American Institute of Electrical Engineers.
Philip N. Moore, Past President, American Institute of Mining Engineers.
A. A. Stevenson, Past President, American Society for Testing Materials.
George S. Webster, American Society of Civil Engineers.

Generals Churchill, Sibert, and Williams automatically become members of the Military Division; Messrs. Adams, Moore, Stevenson, and Webster were elected members of the Engineering Division to represent the Societies as indicated.

Paul Brockett was elected Assistant Secretary of the National Research Council.

The franking privilege was extended to the Committee on Patents, the Camouflage Committee, and the Committee on Neurology and Psychiatry, for official correspondence.

Mr. Hale requested in a telegram that all persons holding office connected with the National Research Council should take the 'oath of office' and the Interim Committee has directed that this be done.

The appointment of the Committee on Nitrate Investigations was reported and it was decided to report to the Executive Board the official authorization of this Committee contained in the following letter:

April 16, 1918.

From: The Acting Chief of Ordnance.

To: Mr. Edward R. Stettinius, Second Assistant Secretary of War.

Subject: Plan for organizing nitrate investigations.

1. Under date of March 30 the National Research Council submitted to you a plan for organizing nitrate investigations. This plan was referred by you to the Ordnance Department and by direction of the acting chief of ordnance was the subject of conference between the officials of the Nitrate Division and Drs. Hale, Johnston, and Noyes of the National Research Council.

2. The following report is submitted as a joint recommendation:

It is our opinion that the best method of securing the desired coöperation is for the Secretary of War to request the National Research Council to designate two or more research men, who shall be appointed Consulting Chemists to the Ordnance Department, and who, together with the officer in charge of the Research Section of the Nitrate Division (now Lieutenant Colonel A. H. White), shall constitute a small executive committee whose duties shall be (a) to survey the researches now in progress, (b) to plan further investigation relating to nitrogen-fixation processes, (c) to arrange for the active prosecution of such investigations, and (d) to exercise close oversight over their progress; the actions taken by this committee and the allotment of funds recommended to it to be subject to the approval of the Chief of the Nitrate Division.

It has been arranged that, if this request be made, the Council will designate as Chairman of the Committee, Arthur A. Noyes, Chairman of the Nitrate Supply Committee appointed by the Secretary of War, and Director of the Research Laboratory of Physical Chemistry at the Massachusetts Institute of Technology; and as second member of the Committee, John Johnston, Executive Secretary of the National Research Council and

Chairman of its Division of Chemistry and Chemical Technology, and Research Chemist of the American Zinc, Lead and Smelting Company. Both these men are resident in Washington and will devote a large part of their time to the work.

For the Nitrate Division

(Signed) J. W. JOYES,
Col. Ord. U. S. A.

For National Research Council

(Signed) GEORGE E. HALE,
Chairman,

(Signed) JOHN JOHNSTON,
Secretary,

(Signed) ARTHUR A. NOYES,
Chairman of Nitrate Committee.

I recommend that this joint report be approved:

(Signed) W. S. PEIRCE,
Brig. Gen. Ord. N. L. Acting Chief of Ordnance.

1st Ind.

Office of Second Assistant Secretary of War. To the Acting Chief of Ordnance.

1. Forwarded. Approved.

(Signed) EDW. R. STETTINIUS,
Second Assistant Secretary of War.

Division of General Relations.—The name of the Administrative Division was changed to Division of General Relations (including Foreign Relations, State Council Relations, Industrial Relations, and Relations with Educational Institutions). The Chairman gave a general account of its recent activities.

Committee on Relations with Educational Institutions.—The Chairman, Mr. Merriam, said that at the request of the Committee on Education and Special Training, the question of the reorganization of the courses in colleges and universities to meet war purposes had been considered, and that the Division of Geology and Geography had formulated plans for the reorganization of methods of presenting new courses or modifications of courses in the fields covered by that Division. It was

Moved: That the Council express an interest in the scheme which the Committee on Education and Special Training has in preparation and a willingness to assist the Committee in such ways as it may desire. *(Adopted.)*

Research Information Committee.—S. L. G. Knox was named Scientific Attaché of the American Embassy at Rome, and Edgar Buckingham, of the Bureau of Standards, was elected Technical Assistant to the Scientific Attaché at Rome.

Mr. Noyes brought up for consideration the work of the Research Information Committee and presented the following order from the War Department in regard to the part that the Army would take in cooperating with the National Research Council in the securing and distributing of information:

WAR DEPARTMENT,
THE ADJUTANT GENERAL'S OFFICE,
WASHINGTON

July 2, 1918

From: The Adjutant General of the Army.

To: The National Research Council, Washington, D. C.

Subject: Information Section, Ordnance Department, and Research Information Committee.

1. The Secretary of War directs that you be informed as follows:

2. The Research Information Committee was formed to establish machinery by means of which the General Staff of the Army and Navy, the scientific organizations in the United States who are working on problems connected with war production and invention, and the various committees of the Council of National Defense charged with work of this nature, may be put in touch with the developments and experimental work being carried on, not only in this country, but in Europe, and kept mutually informed of the state of development of work of this nature.

3. In pursuance of the order of the Secretary of War, establishing this Committee and in order effectively to do this work, it is vitally necessary that the utmost of cordial cooperation be shown by each of the bureaus and committees in question with the Research Information Committee. To secure this the following is directed:

(a) All military Bureaus requiring scientific and technical information are given official status on the Research Information Committee in Washington, D. C.

(b) Representatives of Military Bureaus or of research committees collecting information abroad will be instructed, by their chiefs, to put themselves into direct relationship with the joint committees of the Research Information Committee sitting in Paris or London or later in Rome, in order that information be at once dispatched to the Research Information Committee at Washington, D. C. All communications of scientific investigations or research shall be routed through these channels, even though other channels are employed at the same time.

(c) Official means of intercommunication, such as memorandums, bulletins and the like, between Bureaus of the Army and Committees for research shall be developed to such a degree of efficiency by the Research Information Committee that the distribution of information shall be practically automatic.

(d) Before sending officers or civilians abroad for investigation work, all Army Bureaus or civilian research committees shall get in touch with the Research Information Committee at Washington, D. C. for information and guidance.

(e) The present method of routing information memoranda for file and distribution through the Military Intelligence Branch will not be discontinued.

(f) You will immediately notify this office and the Research Information Committee of the name of the officer who shall represent your Bureau before the Research Information Committee.

By order of the Secretary of War:

(Signed) PAUL GIDDINGS,
Adjutant General.

Moved: That a medical representative be appointed for the Paris office of the Research Information Committee, provided the expenses can be met from the Medical Division or from outside sources.

(*Adopted.*)

Engineering Division.—Reference was made to the affiliation with engineering societies and the forming of an advisory board composed of representatives of the chief engineering societies. Ambrose Swasey and John R. Freeman, were elected members of the Division, and W. J. Lester was elected

Vice-Chairman. The following men were elected to membership in the Engineering Division to represent the Societies indicated:

Comfort A. Adams, President, to represent the American Institute of Electrical Engineers.

Philip N. Moore, Past President, to represent the American Institute of Mining Engineers.

A. A. Stevenson, Past President, to represent the American Society for Testing Materials.

George S. Webster, to represent the American Society of Civil Engineers.

Section on Mechanical Engineering.—The resignation of S. L. G. Knox as Chairman of this Section was accepted with regret, and W. J. Lester was elected Chairman in his place.

Section on Tanks.—A. J. Mason was elected Chairman of this Section.

Section on Metallurgy.—W. P. Barba, G. W. Sargent of the Ordnance Department, and J. E. Johnson, Jr. have been added to this Section.

Section on Electrical Engineering.—C. A. Adams was elected Chairman of this Section.

Engineering Committee.—Mr. Dunn asked if the old Engineering Committee had been in existence or was in existence since War Organization was adopted on March 9, 1918. After discussion it was *Moved*: That notices be sent to the members of the former Engineering Committee by the former Chairman, advising them of the new war organization under plans of March 9, 1918, and inviting their continued cooperation to such an extent as the time during which they can be present in Washington will permit. *Adopted*.

Mr. Dunn stated that while he was Chairman of the Engineering Committee, he had asked the J. G. White Engineering Corporation of New York, to prepare for the National Research Council an elaborate paper on "Clean Coal vs. Dirty Coal," and that a well-illustrated pamphlet had been prepared and printed; of which about 100 copies had been distributed. The plates having been unfortunately destroyed, he now asked authority to reprint the pamphlet, and it was:

Moved: That the J. G. White Engineering Corporation be given permission to reprint the Clean Coal Report of the Engineering Committee of the National Research Council, provided credit be given to the National Research Council for the report. *(Adopted.)*

Division of Chemistry and Chemical Technology.—Since the last report the Executive Committee of the Division has been constituted, as follows:

*John Johnston, Chairman.

Samuel Avery, Vice-Chairman.

Graham Edgar, A. A. Noyes, E. W. Washburn, National Research Council.

W. D. Bancroft, E. P. Kohler, A. B. Lamb, American University Experiment Station.

*C. L. Alsberg, Bureau of Chemistry.

C. L. Parsons, Bureau of Mines.

W. F. Hillebrand, Bureau of Standards.
M. T. Bogert, Chemical Warfare Service, N. A.
H. D. Gibbs, U. S. Signal Corps.
S. A. Tucker, War Industries Board.
*Willis R. Whitney, Naval Consulting Board.

* Nominated to membership by American Chemical Society.

The Division is holding regular meetings lasting for about half an hour on Monday, Wednesday and Friday morning of each week, at which matters of interest are brought up as they arise.

The Division organized a conference on the whole question of explosives, which was attended by representatives of the Army, the Navy, certain civil bureaus of the Government, and by representatives of the large explosives firms. As a result of this conference, it was arranged that an active committee should be appointed to take charge of this whole matter, and accordingly a Committee on Explosives Investigations is being organized. The constitution of this Committee is:

Charles E. Munroe, Chairman.

W. C. Spruance, Jr., Lieutenant Colonel, Ordnance Department.

L. L. Summers, War Industries Board.

T. S. Wilkinson Lieutenant Commander, U. S. N.

E. W. Washburn of the University of Illinois was elected a member of the Chemistry Division; he is especially interested in the question of allocating research problems to men still at the universities and has already made substantial progress in this matter.

Committee on Gases Used in Warfare.—It seemed to be the opinion of the meeting that this Committee may now be discontinued since the present status of this whole work and its absorption by the War Department leaves little or nothing for the Committee to do; but it was thought that no action should be taken in this direction until Mr. Manning's recommendation should be received.

Moved: That the National Research Council express to the Committee on Gases Used in Warfare its high appreciation of the work initiated by that Committee and ably carried out through the efforts of its Chairman, Mr. Van H. Manning, Director of the Bureau of Mines; and thank the Committee for their work. *(Adopted.)*

Division of Geology and Geography.—The Chairman of the Division, Mr. Merriam, reported that Isaiah Bowman, Director of the American Geographic Society, had been elected a member of the Executive Committee, and J. E. Spurr, a member of the Division. The following two books have been recommended for inclusion in the official list of military books:

W. M. Davis, *Handbook of Northern France*.

D. W. Johnson, *Topography and Strategy in the War*.

The following subjects have been considered and acted upon by the Division:

Course of map making at Columbia University.
Lectures on Geography of Northern France.
Card system for personnel in geology and geography available in this country for special kinds of service.

Assistance in selection of camp sites.
Road material report (deposited in U. S. Geological Survey).
Army map instruction in relation to armies in the field.
Needs of war service to geologists.
Instruction in training camps on the subject of Geology and Geography.
Exchange of information bearing on geologic and geographic work.
Coöperation with Committee on Scientific Research of California.
Resources of clear quartz crystals available in this country.
Instruction in geology and geography in educational institutions (in charge of a special committee as follows: C. K. Leith, Chairman, R. A. F. Penrose, Lawrence Martin, Isaiah Bowman, E. B. Matthews.)

Division of Medicine and Related Sciences.—The Chairman of this Division, Mr. Pearce, after reviewing the activities of the Executive Committee, reported progress on the following problems in research work:

The toxicity of Preserved Foods.
Protectors for the ear.
Production of acetone by the fermentation of starch.
Special researches on antiseptics and insecticides.
Louse investigations.
Study of special and rare sugars.
Influence of high explosives in causing shock.
Studies of peripheral nerve injury and repair.
Experimental study of empyema due to streptococcus.
Studies of Anaerobic bacteria.
Studies of hemolytic streptococci occurring in cheese.
Investigation of lung motor.
Study of 13,000 records of soldiers discharged from service on account of nervous or mental trouble.
Discovery of metal or other substitute for petri dish.
Study of Hemostatics.
Investigation of edema among infants
Problems of munition workers.
Critical study of Dreyer's method of testing agglutine of typhoid.
Under the *Sub-Committee on Physiology*:
Study of the Physiology of Shock.
Respiratory Regulation of the CO₂ Capacity of the Blood.
Under the *Sub-Committee on Physiological Chemistry*:
A study of the availability of velvet beans.
The use of malt sugar as a substitute for cane sugar.
The substitution for acetone for various therapeutic products.

Committee on Intoxications among Munition Workers.—The present membership of this Committee is as follows:

H. Gideon Wells, University of Chicago, Chairman.
Alice Hamilton, Bureau of Labor Statistics.
David L. Edsall, Massachusetts General Hospital, Boston, Mass.
A. D. Reilley, Captain, Ordnance Department.

Committee on the Physiology of Shock.—Elected to membership on this Committee:

G. N. Stewart, of Western Reserve University.

Committee on Neurology and Psychiatry.—The name of this Committee was changed to "Committee on Neurology and Psychiatry," and E. E. Southard of the State Psychopathic Hospital of Massachusetts was appointed Acting Chairman with authority to reorganize the Committee; the present Chairman, Stewart Paton, now in active military service, remaining nominally as Chairman.

Committee on Toxicity of Preserved Foods.—The following names were approved as members of this Committee:

J. J. Abel, Professor of Pharmacology, Johns Hopkins Medical School, Chairman.

M. J. Rosenau, Professor of Preventive Medicine, Harvard Medical School.

Sub-Committee on the Study of Fatigue in Relation to Industrial Pursuits.—Upon recommendation of the Chairman, F. S. Lee, the membership of this Committee was completed by adding the members of the Committee on Industrial Fatigue of the Division of Labor of the Council of National Defense, the Committee as enlarged being as follows:

Frederic S. Lee, Professor of Physiology, Columbia University, Chairman.

Thomas Darlington, Secretary Welfare Committee, American Iron and Steel Institute.

Robert E. Chaddock, Associate Professor of Statistics, Columbia University.

Raymond Dodge, Professor of Psychology, Wesleyan University.

David L. Edsall, Professor of Clinical Medicine, Harvard Medical School.

P. Sargent Florence, Organizing Secretary of the Committee of the British Association for the Advancement of Science, appointed to investigate Fatigue from the Economic Standpoint.

Josephine Goldmark, Publication Secretary, National Consumers' League.

Ernest G. Martin, Professor of Physiology, Leland Stanford University.

J. W. Schereschewsky, Officer in Charge of Field Investigations in Occupational Diseases and Industrial Hygiene, Public Health Service.

Ernest L. Scott, Associate in Physiology, Columbia University, Captain Sanitary Corps, U. S. A.

A. W. Ryan.

Division of Agriculture, etc.—The Chairman of the Division, Mr. Kellogg, reported that A. F. Woods, of Maryland State Agricultural College, has been elected Chairman of the Committee on Agriculture, and Vice Chairman of the Division; and that the following problems were under consideration: Tropical Hardwoods, Fish Preserving, Rodent Pests.

Special Committee on Sisal and Sisal Substitution.—This committee has been formed for the consideration of the problem of sisal and sisal substitution for use as binder twine, with E. M. East, Bussey Institution, as Chairman.

Special Committee on Fertilizers.—The following members have been appointed on this Committee and a plan for publicity work to educate the people on the subject has been formulated:

A. F. Woods, Chairman, E. W. Allen, F. J. Alway, S. Avery, K. F. Kellement, W. G. Lipman, B. E. Livingston.

Moved: That the Special Committee on Fertilizers be allotted the sum of \$1,000 or such part thereof as may be necessary to meet the general expenses of that Committee, from the allotment for the Division of Agriculture. *(Adopted.)*

Moved: That the Special Committee to undertake a determination of Physiological Salt Requirements of certain Cultivated Plants be allotted an appropriation of \$2250 or such part thereof as may be necessary for the general expenses of that Committee, from the allotment of the Division of Agriculture. *(Adopted.)*

Moved: That the Special Committee on Problems of Protein Metabolism in Animal Feeding be allotted \$500 for current expenses from the allotment of the Division of Agriculture. *(Adopted.)*

Mr. Woodward *Moved:* That the above acts of the Interim Committee be approved, ratified and confirmed. *(Adopted.)*

The Board adjourned at 12.45 a.m.

PAUL BROCKETT, *Assistant Secretary.*

MINUTES OF THE MEETING OF THE EXECUTIVE BOARD

AT THE NATIONAL RESEARCH COUNCIL BUILDING, AUGUST 13, 1918, AT 9.35 A.M.

Present: Messrs. Dunn, Mendenhall, Merriam, Noyes, Southard, Washburn, Welch, Woods, Woodward, and Yerkes.

The Acting Chairman reviewed the work of the Research Council since the last meeting; a general statement of the activities of some of the Divisions is appended.

The holding of a joint meeting of the Executive Board with the Council of the National Academy on Monday, September 9, to consider matters to be presented to the conference of Academies in London on October 9, was approved.

Committee on Reconstruction Problems.—Mr. Merriam presented a report from the special committee brought together to consider plans for reconstruction work after the war.

Moved: That the following recommendations of the Committee be approved:

That a committee be constituted on Reconstruction Problems, to be appointed by the Acting Chairman.

That this committee be empowered to increase its membership by associating with itself experts in each line investigated and to coöperate with other organizations engaged in reconstruction work.

That an appropriation of \$5,000 be made to cover necessary clerical and traveling expenses, procuring of documents, and reports, provided funds are available.

That the committee be instructed to map out the whole field of reconstruction, and ascertain what agencies are now working in each portion of the field.